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About the cover

Shepherdess with her Flock and Dog was drawn by Jean-François Millet (French, 1814-1875) in a style not unlike other French realists of the Barbizon school. Artists in this group were the first landscapists to work in the open air, which allowed them to replace the traditional view of nature with one more authentic. Millet became known as the first French artist to treat the worker and his milieu as a serious subject. Having been born into a peasant family, Millet did not idealize rustic life, but he did want to portray peasants, their labors, and their countryside as they really were.

Crayon and pastel were the media used for this 14-¼ × 19-¼-inch drawing. The Museum of Fine Arts, Boston granted permission to reproduce this drawing, which was a bequest (1935) of Mrs. Henry Lee Higginson in memory of her sister, Pauline Agassi-Shaw.

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Serratia marcescens mastitis in a dairy herd (S. D. White)

A survey of equine parasite control practices in Tennessee

Craig R. Reinemeyer, DVM, PhD, and Barton W. Rohrbach, VMD, MPH

Summary: *A weighted, random sample of 130 horse owners in Tennessee was selected from subscribers to an equine newsletter published by the Agricultural Extension Service. Data about the participants' farms, horses, parasite control practices, and sources of information regarding equine parasite control were obtained through a telephone survey. The response rate was 98%.*

The typical respondent kept 4 horses on 2 pastures totaling 15 acres, and did not rotate pastures as a parasite control measure. The majority (83%) of horse owners indicated that they administered anthelmintics according to a regular schedule; 9% delayed deworming until the onset of weight loss.

Proportions of owners deworming the various classes of horses at least 1, 2, 3, or 4 times annually were as follows: foals (0 to 6 months) 100, 60, 15, and 0%, respectively; weanlings (6 to 12 months) 100, 91, 32, and 0%, respectively; yearlings (1 to 2 years) 100, 100, 86, and 51%, respectively; and adults (> 2 years) 100, 94, 56, and 24%, respectively. Median treatments of yearlings and adults were evenly spaced at 6-, 4-, or 3-month intervals when the owners dewormed 2, 3, or 4 times annually, respectively. Mean intervals between treatments of foals and weanlings were less regular.

Of the horse owners who dewormed 2 or more times annually, most (53 to 80%) used the same product exclusively for all treatments. In all age classes of horses, ivermectin paste (46 to 63%) was the most common product used, followed by tube deworming (23 to 38%) and use of benzimidazoles (4 to 16%). Nearly all respondents (98%) planned to use the same anthelmintics the next year, and 91% intended to maintain the same frequency of treatment.

Equine-oriented magazines (41%) and veterinarians (27%) were considered the most important sources of information about when to deworm horses, and veterinarians (75%) were the most important source of information about which product to use.

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The authors thank Dr. Hugh S. McCampbell and Ms. Carol Swearingen for assistance with the survey.

Internal parasite control is one of the most important and most frequently administered health care measures for horses. Horse owners consider it essential for prevention of colic, maintenance of body weight and condition, and achievement of optimal growth and performance.[1]

The most crucial elements in the success of an equine parasite control program are selection of appropriate anthelmintics and proper timing of administration.[2] Despite the importance of these factors, little detailed information about parasite control practices of horse owners is available. Accurate data, including identification of the anthelmintic products used and the timing and frequency of their administration, are essential for critical evaluation of the relative merits and deficiencies of a parasite control program.

Not all equine parasite control measures are ultimately beneficial; some may be ineffective, and others may be potentially harmful. Surveys of parasite control practices for cattle in Britain indicated that nearly half of all treatments were wasted.[3] Reasons for ineffective usage included treatment of the wrong classes of cattle, use of incorrect drugs for the target parasites, and treatment at the wrong time of year. Anthelmintic wastage may be greater for horses than for cattle, because horses are treated more frequently. In addition, many populations of cyathostomes (small strongyles) have become resistant to several chemically related dewormers, whereas anthelmintic resistance seldom has been documented in cattle.[4] Continued use of drugs to which a population of worms is resistant further intensifies genetic selection and reduces the heterogeneity of the population.

Parasite control constitutes a considerable expenditure for horsemen. According to a 1981 survey, Quarter Horse owners in the United States spent an average of $27/horse/yr for internal parasite control.[5] On the basis of this figure and an approximate US horse population of 6.6 million,[6] a conservative estimate of the total expenditure for equine anthelmintics during 1987 was $178 million.

The objective of the survey reported here was to determine the parasite control practices of a

representative sample of horse owners in Tennessee.

Materials and methods

Selection of the study sample—The survey sample was selected from subscribers to an equine newsletter (*Tennessee Horse Express*, Agricultural Extension Service, The University of Tennessee Institute of Agriculture) that is published bimonthly. The newsletter is distributed free of charge to people in each county in Tennessee through the office of the county extension agent. The relative number of horse owners in each county in the state was estimated, using a 1982 census[7] of the equine population in Tennessee (Fig 1). The assumption was made that the number of horse owners in a county is highly correlated with the number of horses.

The sampling procedure was conducted in 2 stages. The first stage determined the number of people from each county to be included in the survey. Using a weighted, randomized method, each county was assigned a unique range of numbers depending on the relative size of the horse population within the county. This range represented the number of chances that a horse owner had to be included in the survey sample. The weighted method assured that horse owners residing in a county with many others had a probability of being included in the survey equal with that of owners residing in a county less populated by horse owners. This method selected the county of origin for the sample of 130 Tennessee horse owners.

In the second stage of sampling, a predetermined (in stage 1) number of people was selected randomly from the newsletter subscription lists of each county. If the candidate did not have a telephone, or did not own and/or was not responsible for the care of any horses, a replacement was selected randomly from the remaining subscribers in the same county.

Survey questionnaire—Information was solicited for the period Jan 1 to Dec 31, 1987. Participants were requested to provide information about their farms, and to describe the demographics of resident animal populations. Owners were asked how they decided when to deworm horses and which products were used. Information about internal parasite control programs was collected for the following equine subclasses: foals (0 to 6 months); weanlings (6 to 12 months); yearlings (1 to 2 years); adult horses (> 2 years), and broodmares. Participants were asked to rank the perceived efficacy of various routes of anthelmintic administration, to list any anthelmintics that had been discontinued, and to describe their plans for altering parasite control practices in the subsequent year. In addition, participants were requested to identify their major sources of information about control programs and anthelmintics, and to assess the adequacy of their information on equine parasite control.

Results

Of 130 people contacted, 128 (98%) were willing to participate in the survey. Of the original pool of candidates selected for the study, 12 of 130 (9%) did not have a current telephone listing, and 2 of 130 (2%) had not owned or cared for any horses during 1987. Replacements were selected for those 14 persons according to the procedure described previously. Only 2 of 130 (2%) contacts declined to participate in the study; one of these had a hearing disability and could not understand the interviewer.

Of 128 respondents, 111 (87%) kept horses at their place of residence. Median farm size was 50 acres, and the median number of acres used as horse pasture was 15. Two or more pastures were available for horses on 93 of 128 farms (73%), and 42 of 128 farms (33%) had 3 or more pastures. Of respondents with 2 or more pastures, only 24 of 93 (26%) used rotation of pastures as a specific technique to control parasitism.

Of the 128 respondents, 125 (98%) cared for

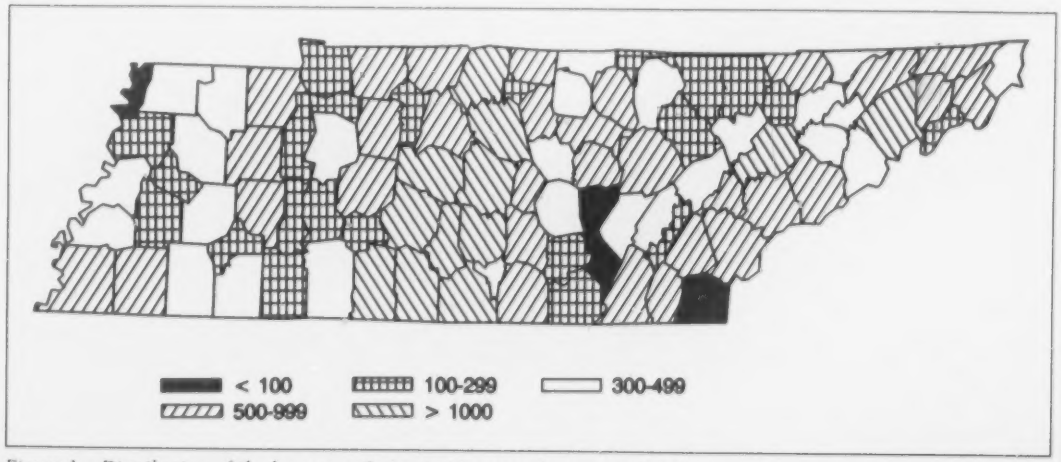

Figure 1—Distribution of the horse population in Tennessee by county, 1982.

a total of 707 adult horses, 53 (41%) cared for 215 pregnant mares, 40 (31%) cared for 139 foals, 29 (23%) cared for 100 yearlings, and 13 (10%) cared for 83 weanlings. The median number of horses cared for by survey participants was 4.

One hundred six respondents (83%) dewormed their horses according to a regular schedule; 12 (9%) regarded the onset of weight loss to be the most important factor for determining when to deworm.

All respondents (40/40) dewormed foals at least once before foals reached 6 months of age. A second deworming was administered by 24 of 40 foal owners (60%), and 6 of 40 (15%) dewormed the foals 3 times. The 16 of 40 owners (40%) who dewormed foals only once did so at a mean foal age of 4.9 months; 18 of 40 owners (45%) dewormed foals twice at mean foal ages of 2.3 and 5.3 months, and 6 of 40 (15%) dewormed foals 3 times at mean foal ages of 2.2, 4.0, and 5.7 months of age.

All respondents (22/22) dewormed weanlings at least once. A second treatment was administered by 20 of 22 owners (91%), and 7 of 22 (32%) dewormed weanlings 3 times. The 2 of 22 respondents (9%) who dewormed weanlings only once treated them at a mean weanling age of 8.5 months; 13 of 22 owners (59%) dewormed weanlings twice, at mean ages of 7.9 and 11.2 months, and 7 of 22 (32%) dewormed weanlings 3 times, at mean weanling ages of 7.6, 9.4, and 11.3 months.

Yearlings were dewormed at least twice by all respondents (35/35), and third and fourth treatments were administered by 30 of 35 (86%) and 18 of 35 (51%) owners, respectively. Of 35 owners, 5 (14%) dewormed yearlings twice, during the median months of March and September; 13 of 35 owners (37%) dewormed 3 times during the median months of March, July, and November, and 18 of 35 (51%) administered 4 treatments to yearlings during the median months of February, May, August, and November.

All respondents (126/126) dewormed mature horses at least once annually, and 119 of 126 (94%) dewormed horses twice. Third and fourth treatments were administered by 70 of 126 (56%) and 30 of 126 (24%) owners, respectively. Only 7 of 126 owners (6%) dewormed mature horses once annually, during the median month of June. Of 126 owners, 49 (39%) dewormed adult horses twice annually in the median months of March and September; 40 of 126 (32%) dewormed 3 times/yr in the median months of February, June, and October, and 30 of 126 (24%) dewormed adults 4 times/yr in the median months of February, May, August, and November.

All 53 owners who cared for broodmares dewormed them during the 3 months after foaling, and 51 (96%) administered anthelmintics during the 3 months prior to breeding. Pregnant mares were treated during the first and second trimesters by 38 (72%) and 46 (87%) owners, respectively, but only 18 of 53 owners (34%) dewormed during the third trimester.

Table 1—Proportion (%) of horse owners in Tennessee who treated various classes of horses two or more times annually and used the same anthelmintic or route of administration exclusively

Class	No. of owners	Ivermectin	Intubation*	Benzimidazole
Foals	16/20 (80)	9/16 (56)	5/16 (31)	2/18 (12)
Weanlings	13/20 (65)	6/13 (46)	5/13 (38)	4/13 (18)
Yearlings	26/35 (74)	15/26 (58)	10/26 (38)	1/28 (4)
Adults	71/119 (60)	45/71 (63)	16/71 (23)	10/71 (14)
Pregnant	27/51 (53)	15/27 (56)	9/27 (33)	3/27 (11)

*Individual products were not specified.

Depending on the class of horses treated, 53 to 80% of the horse owners in Tennessee who dewormed 2 or more times during 1987 used a single product exclusively (Table 1). Ivermectin (46 to 63%) was the most common product used exclusively, followed by products administered by stomach tube (23 to 38%), and benzimidazoles (4 to 16%). An attempt was not made to identify the various drugs administered by use of nasogastric intubation; this information may not have been conveyed to the owners by the attending veterinarians.

Nearly all respondents (125/128; 98%) indicated that they planned to use the same drugs the next year. Only 12 of 128 (9%) respondents indicated that they intended to deworm horses more often in the subsequent year; 116 of 128 (91%) planned to maintain the same frequency of treatment.

Only 18 of 128 respondents (14%) had discontinued the use of any equine anthelmintic. Reasons for discontinuing use ranged from adverse side effects to economic considerations, but no owners cited reasons associated with anthelmintic resistance.

Similar proportions of respondents considered nasogastric intubation (54%) and oral administration of pastes (44%) to be the most effective means of deworming horses. Orally administered liquids were considered best by 2 of 128 respondents (2%); none considered all routes of administration to be equally effective, and 1 had no opinion.

The relative importance of various sources of information about equine parasite control programs and anthelmintics is seen in Table 2. Equine-oriented magazines and veterinarians were the most important sources of information about parasite control programs and anthelmintics, respectively. Seventy-eight respondents (61%) believed they had sufficient information to enable them to prevent or control worms effectively. A similar proportion, 81 of 128 (63%), perceived a need to learn more about equine parasite control.

Discussion

Our sampling method was designed to provide equal representation by county, based on estimated numbers of horse owners. Selecting partic-

Table 2—Most important sources of information about parasite control and choice of anthelmintic: frequency of responses by Tennessee horse owners, 1987

Information source	Control programs: No. of respondents (%)	Anthelmintic: No. of respondents (%)
Veterinarians	34 (27%)	98 (75%)
Equine-oriented magazines	53 (41%)	11 (9%)
Other	18 (14%)	9 (7%)
Word of mouth	9 (7%)	5 (4%)
Feed store personnel	7 (6%)	6 (5%)
Package inserts	7 (6%)	1 (1%)
County extension agents	0	0
4-H advisors	0	0
Meetings; programs	0	0

ipants from subscribers to an educational newsletter, however, could bias the sample toward horse owners who were more knowledgeable or more concerned about the health of their horses. Also, by eliminating subscribers that had no current telephone listing, our sample may have been biased toward people with higher incomes and, therefore, the financial means to provide better health care, including more rigorous parasite control practices. If these assumptions are correct, the responses obtained in this survey may represent a standard of equine health care that is better than average. Owing to the random method of selection of our survey population and the high response rate (98%), the results of this survey may have implications for horse owners outside the state of Tennessee.

The majority (83%) of respondents used a regular schedule to determine the timing of anthelmintic treatments. Median treatments of yearlings and adults were evenly spaced at 6-, 4-, or 3-month intervals when the owners dewormed 2, 3, or 4 times annually, respectively. Mean intervals between treatments of foals and weanlings were less regular.

Despite the administration of anthelmintics according to a regular schedule, only 6 of 40 (15%) and 7 of 22 (32%) owners of foals and weanlings, respectively, dewormed at intervals appropriate to prevent patent infections with *Parascaris equorum*, a major nematode pathogen of young horses.[8] Because the minimal prepatent period for *P equorum* is approximately 11 weeks,[9] ascarid prophylaxis requires that treatments begin at 2 months of age and be repeated bimonthly through the first year of life.[10] Longer treatment intervals could permit environmental contamination with ascarid eggs, which can remain viable for several years.[11] Treatment intervals for yearlings and adults were uniformly longer than 11 weeks, but ascarid infections in horses > 1 year old are controlled by host immunity and have little pathogenic or epidemiologic impact.[12]

Only 15% of foals, 32% of weanlings, and no adults or yearlings were dewormed frequently enough to prevent patent cyathostome (small strongyle) infections. The egg reappearance period for cyathostomes is approximately 4 weeks after treatment with most equine anthelmintics, and approximately 8 weeks after treatment with ivermectin.[13] The shortest median interval between treatments of adults and yearlings in this survey was 3 months. Depending on the choice of drugs, these programs permitted cyathostomes at least 4 to 8 weeks of patency after treatment.

The typical schedule of deworming reported in this survey probably achieved intermittent removal of adult worms, but did not accomplish the primary objective of parasite control programs, that is, prevention of environmental contamination with eggs.[10, 14] This deficiency, however, does not necessarily support the inference that these programs were practical failures; indeed, only 9% of respondents reported clinical evidence of parasitic disease (weight loss). Most owners perceived their parasite control programs to be effective, as indicated by the observation that 91% intended to use the same products at the same frequency during the subsequent year. Owners did not plan to decrease the frequency of treatment despite recent recommendations for strategic control programs that are based on fewer treatments given at ecologically critical times in the parasitic cycle[15] or on minimal treatments combined with pasture hygiene.[16]

The majority (72 to 100%) of owners dewormed broodmares during the 3 months before breeding and after foaling, and during the first 2 trimesters of pregnancy, but a lower proportion (34%) dewormed during the last trimester. This exception may reflect adherence to recommendations associated with carbon disulfide and organophosphate dewormers, which were used more commonly in the past than today. Use of these products is contraindicated in the last month of gestation,[11, 17] but other currently marketed equine anthelmintics do not have similar precautions during that period. Horse owners do not need to withhold anthelmintic treatments on the basis of advanced pregnancy.

High proportions of owners (53 to 80%) that gave 2 or more treatments tended to use the same anthelmintic exclusively (Table 1). The trend of exclusive anthelmintic usage is disturbing because frequent and repeated use of the same or chemically related drugs exerts strong selection pressure for the development of resistance by target organisms. Although treatment intervals reported in this survey were too long to prevent contamination, they were, nevertheless, sufficiently short to select for resistance. Surveys in Australia[18] have indicated that benzimidazole resistance developed in horse herds treated at intervals of 16 weeks or less, a treatment frequency reported in this survey by 56 and 88% of owners of adult and yearling horses, respectively. The problem of exclusive drug usage becomes even more alarming when one considers that 98% of respondents planned to use the same anthelmintics in the subsequent year.

Ivermectin was the most common drug used

exclusively by respondents to the survey. Although resistance to ivermectin has not been documented for equine nematodes, practices such as exclusive usage and frequent treatment could foster its development. Naturally acquired ivermectin resistance has been reported in sheep,[19, 20] and resistance has been induced experimentally in lambs.[21] In addition, decreased degradation of feces has been reported in pastures grazed by horses treated with ivermectin,[a] and exclusive use of ivermectin could intensify any deleterious ecologic effects.

It is unfortunate that a large proportion (54%) of horse owners continues to attribute superior efficacy to "tube worming" despite a lack of supporting evidence.[b] This traditional notion persists even though most drugs administered by nasogastric intubation are available in alternate forms that can be given orally or added to feed. Tube worming is not without some hazard to the horse, handler, and veterinarian; it is regrettable that consumer preference and tradition foster the perpetuation of this atavistic and scientifically indefensible practice.

At 41%, horse-oriented publications were a more important source of information about parasite control programs than were veterinarians (27%). Equine-oriented magazines have a responsibility to publish accurate and up-to-date information about parasite control, and recognized authorities should be encouraged to exploit this venue for dissemination of current information

Veterinarians (75%) were the most important source of information about the choice of anthelmintics. Ideally, this vote of confidence by consumers can serve as a foundation for the increased involvement of veterinarians in designing, implementing, and monitoring equine parasite control programs.

Several potential deficiencies in parasite control practices were revealed by this survey. The following recommendations are offered. Anthelmintic treatments for foals should begin at 2 months of age and should be repeated bimonthly until weanlings are 12 months of age, to prevent patent infections with *P equorum*. To minimize transmission of cyathostomes, intervals between treatments should not exceed the minimal egg reappearance period (4 weeks, with use of standard anthelmintics; 8 weeks, with ivermectin) during periods when environmental conditions are favorable for development of eggs to larvae. Practices that result in strong selection for development of anthelmintic resistance (eg, frequent and repeated use of drugs of the same chemical class) should be avoided, alternatives for treatment at regular intervals should include strategic seasonal treatments[13, 15] and pasture hygiene,[16] and veterinarians should inform horse owners about factors that select for anthelmintic resistance. Administration of anthelmintics by nasogastric intubation should be discouraged. Horse owners need to become better informed about parasite control practices and anthelmintics, equine-oriented magazines should attempt to publish current, expert information on those subjects, and practitioners need to assume a greater role in recommending and monitoring control programs.

[a]Herd RP. Anthelmintic-related problems in equine parasite control (abstr), in *Proceedings*. World Assoc Adv Vet Parasitol 1989;13:37.

[b]Hackett GE, Buonafide J. A comparison of equine anthelmintics by route of administration (abstr), in *Proceedings* Am Assoc Vet Parasitol 1988;33:38.

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NOTE

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JOURNAL

OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION

Food Animal Economics
Financial comparison of three testing strategies for detection of estrus in dairy cattle

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Veterinary success—luck or skill?

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Brucella abortus infection in 14 farm dogs

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Coming Soon . . .

Rate of enrollment decline eases

Statistical information provided by the Association of American Veterinary Medical Colleges indicates that the 1989-1990 enrollment of 1st-year students declined by only one student in the 27 US veterinary colleges. In the preceding year, first-year enrollment declined by 12, and two years ago, by 60. Enrollment in the four Canadian colleges increased by one. Total enrollment in DVM-degree programs in the United States and Canada declined by 104, compared with a decrease of 136 in 1988-1989. For the 1989-1990 academic year, 9,614 students were enrolled (Table 1), including 8,456 in the US colleges and 1,158 in the Canadian colleges. Canadian enrollment increased by 14 students over the preceding year.

Of the total US and Canadian enrollment in DVM-degree programs, female students continue to outnumber male students, 59% to 41% (Table 1), compared with 58% to 42% in the preceding year. Of the 2,402 graduates, 6% were minority (non-Caucasian), and of those 6%, 82 were female and 57 were male. Total enrollment in US and Canadian graduate-degree and certificate programs in 1989-1990 is 2,642 (Table 2), down by 96 participants over 1988-1989. The 1989-1990 total includes 1,630 with and 1,012 without DVM or VMD degrees.

Enrollment by class is presented in Table 3, and geographic distribution of first-year students in the US veterinary colleges is shown in Table 4.

Written by Carole S. Jordan, staff writer, AVMA Division of Scientific Activities.

TABLE 1—Total enrollment in veterinary medical degree programs

	Male		Female		Total
	No.	%	No.	%	No.
United States	3,481	41	4,975	59	8,456
Canada	452	39	706	61	1,158
Total	3,933	41	5,681	59	9,614

TABLE 2—Total enrollment in US and Canadian graduate-degree and certificate programs

Graduate	MS	PhD	Certificate of internship	Certificate of residency	Certificate of residency and MS	Certificate of residency and PhD	Total
DVM	399	647	119	203	193	69	1,630
Non-DVM	491	521	—	—	—	—	1,012
Total	890	1,168	119	203	193	69	2,642

TABLE 3—Total enrollment of veterinary medical degree students by class year

College	1st Year	2nd Year	3rd Year	4th Year	Total
Auburn University	90	85	89	87	351
California, University of	123	115	122	114	474
Colorado State University	125	128	123	124	500
Cornell University	81	79	81	77	318
Florida, University of	80	81	83	73	317
Georgia, University of	82	73	66	79	300
Illinois, University of	83	83	72	85	323
Iowa State University	80	70	91	102	343
Kansas State University	99	98	87	94	378
Louisiana State University	65	57	65	77	264
Michigan State University	91	103	91	96	381
Minnesota, University of	62	67	62	68	259
Mississippi State University	43	43	40	44	170
Missouri, University of	64	62	63	68	257
North Carolina State University	72	65	70	63	270
Ohio State University	129	130	125	122	506
Oklahoma State University	71	54	69	65	259
Oregon State University	38	33	34	35	140
Pennsylvania, University of	110	101	102	106	419
Purdue University	69	59	61	56	245
Tennessee, University of	54	55	61	-0-	170
Texas A&M University	127	118	110	123	478
Tufts University	73	71	61	63	268
Tuskegee University	59	55	56	40	210
Virginia Polytechnic Institute	80	76	79	77	312
Washington State University	61	58	60	62	241
Wisconsin, University of	83	79	74	67	303
Total-US Colleges	2,194	2,098	2,097	2,067	8,456
Guelph, University of	102	101	99	98	400
Montreal, University of	74	71	73	72	290
Saskatchewan, University of	72	69	70	72	283
Atlantic Veterinary College	47	44	47	47	185
Total-Canadian colleges	295	285	289	289	1,158
Total-US and Canadian colleges	2,489	2,383	2,386	2,356	9,614

Table 4—Geographic distribution of entering class of veterinary students in US colleges

Residence	Universities																										
	Auburn	California	Colorado	Cornell	Florida	Georgia	Illinois	Iowa	Kansas	Louisiana	Michigan	Minnesota	Mississippi	Missouri	North Carolina	Ohio	Oklahoma	Oregon	Pennsylvania	Purdue	Tennessee	Texas A&M	Tufts	Tuskegee	Virginia Polytechnic	Washington	Wisconsin	Total
Alabama	48	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	...	...	...	57
Alaska	...	...	4	1	...	...	...	...	1	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	2	...	10
Arizona	...	1	14	...	...	...	...	...	1	...	...	...	...	...	1	1	...	1	...	1	...	...	...	...	...	2	...	22
Arkansas	...	...	...	...	...	...	...	...	...	15	...	...	1	1	...	...	3	...	...	...	...	...	...	...	...	...	...	20
California	3	118	...	...	2	1	...	2	9	1	1	4	4	...	...	1	2	1	3	4	1	...	1	2	...	3	8	171
Colorado	...	...	80	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	81
Connecticut	2	...	...	2	...	...	1	...	...	...	1	...	...	...	...	1	...	...	3	2	...	...	10	...	...	...	1	23
Delaware	...	...	...	1	...	...	...	...	...	...	...	2	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	5
District of Columbia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0
Florida	2	...	1	1	73	1	...	...	...	...	1	...	2	...	2	1	...	...	...	2	3	...	2	2	...	...	...	93
Georgia	1	...	...	...	...	60	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	3	...	...	...	66
Hawaii	...	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	6
Idaho	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11	...	11
Illinois	...	...	...	...	...	...	73	...	...	...	2	3	1	...	...	1	...	...	...	2	2	...	...	4	...	...	...	88
Indiana	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	36	...	...	...	...	...	...	...	37
Iowa	...	...	...	...	...	...	...	65	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	65
Kansas	...	...	...	...	...	...	...	...	57	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	57
Kentucky	31	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	1	...	...	2	...	...	...	36
Louisiana	...	...	...	...	...	...	...	...	1	48	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	48
Maine	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	4	...	...	...	...	6
Maryland	...	1	...	2	...	...	...	...	...	...	...	...	1	...	...	5	...	...	4	1	1	...	...	1	30	...	...	46
Massachusetts	...	...	...	...	1	...	...	...	...	...	1	2	...	...	...	2	...	...	...	...	3	...	48	...	...	...	1	58
Michigan	...	...	...	...	...	...	...	1	...	...	77	1	...	...	...	1	...	...	1	1	...	...	1	...	...	...	...	83
Minnesota	...	...	...	...	...	...	...	...	1	...	...	34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	35
Mississippi	...	...	...	1	...	...	...	...	...	...	...	...	23	...	...	...	...	...	...	...	...	...	...	2	...	...	...	26
Missouri	...	...	...	...	...	...	2	...	...	...	...	...	...	53	...	...	...	...	...	2	...	...	...	...	...	...	...	57
Montana	...	...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	2	...	11
Nebraska	...	...	...	...	...	...	...	1	19	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	21
Nevada	...	...	2	...	...	...	...	...	...	...	...	...	...	7	...	2	...	1	...	...	...	...	...	...	...	...	3	15
New Hampshire	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	1	...	...	...	...	4
New Jersey	...	...	...	6	1	...	2	...	1	...	1	1	1	...	2	4	...	...	18	4	...	...	1	5	...	...	...	45
New Mexico	...	1	17	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	19
New York	...	...	...	60	2	...	2	1	...	...	3	3	5	...	...	3	1	...	8	7	5	...	1	4	...	...	...	105
North Carolina	...	...	...	...	...	...	...	...	...	...	...	...	1	...	62	...	...	...	...	...	...	...	...	3	...	...	...	66
North Dakota	...	...	1	...	...	...	...	7	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9
Ohio	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	95	...	...	...	...	...	...	...	1	...	...	...	96
Oklahoma	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	63	...	...	...	...	...	...	...	...	...	...	63
Oregon	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	30	...	...	...	...	...	...	...	...	...	32
Pennsylvania	...	...	...	2	...	...	1	1	1	...	1	1	1	1	...	3	...	...	72	4	3	...	...	2	...	...	1	94
Puerto Rico	...	...	...	1	...	2	...	1	1	2	...	...	...	1	...	1	...	...	...	1	...	...	...	4	...	...	...	14
Rhode Island	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	3
South Carolina	...	...	...	...	...	15	...	...	...	...	...	...	1	...	2	...	...	...	...	...	...	...	...	3	...	...	...	21
South Dakota	...	...	...	...	...	...	...	...	2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3
Tennessee	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32	...	...	2	...	...	...	35
Texas	1	...	...	...	...	...	...	1	...	1	...	...	2	...	...	...	1	...	...	...	...	127	...	2	...	...	...	135
Utah	...	...	7	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	10
Vermont	...	...	...	2	...	...	1	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...	...	6
Virginia	1	...	...	...	1	...	...	...	...	...	...	1	...	...	3	...	...	...	...	...	...	...	...	3	50	...	...	59
Washington	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	38	...	41
West Virginia	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	2	...	...	...	9
Wisconsin	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	67	71
Wyoming	...	...	8	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9
Bahamas	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1
Canada	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	5
England	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Holland	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Malaysia	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
Israel	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Jamaica	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1
Total	90	123	125	81	80	82	83	80	99	65	91	82	43	64	72	129	71	38	110	89	54	127	73	59	80	61	83	2,194